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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/462,387	04/19/2000	MARC DANIEL	A32851-PCTU	5025

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EXAMINER
SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
1714	

DATE MAILED: 08/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/462,387	Applicant(s) DANIEL ET AL.
	Examiner Callie E. Shosho	Art Unit 1714

-- Th MAILING DATE of this communication appears on th cover sheet with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *1/10/03 & 5/27/03* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13 and 15-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13,15-22 and 24-29* is/are rejected.

7)☒ Claim(s) *23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/10/03 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 13, 15-22, and 24-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Hahn (U.S. 6,517,653).

Hahn discloses rubber composition vulcanizable with sulfur which comprises 40-100 parts diene polymer, 3-80 parts silica, 1.5-8 parts silica coupler identical to that of presently claimed formula (I), 0.2-1 parts guanidine, and 0.8-3.5 parts amine. It is disclosed that upon vulcanization, the rubber composition is used for many purposes including tire tread (col.1, lines

44-49 and 54-57, col.3, lines 38-39 and 53-65, col.4, lines 5-10, col.4, line 50-col.5, line 49, col.6, lines 1-2, and col.6, line 61-col.7, line 6). Based on the above amounts, it is disclosed that the composition comprises, for instance, 1% amine (0.8/80) based on the amount of silica.

Attention is drawn to example 11, which discloses rubber composition comprising polybutadiene, 15 parts silica, 2.4 parts silica coupler, 0.4 parts diphenylguanidine, and 0.75 parts hexamethylenetriamine. From this example, it is calculated that the composition comprises 16% silica coupler based on the amount of silica and 2.7% diphenylguanidine based on the amount of silica.

In light of the above, it is clear that Hahn anticipates the present claims.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 13, 15-22, and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hojo (U.S. 5,939,493) in view of Jalics et al. (U.S. 5, 708,053).

Hojo discloses a sulfur vulcanized rubber composition comprising (i) 100 parts rubber such as polybutadiene, styrene-butadiene, and polyisoprene, (ii) 15-85 phr silica, (iii) 1-15%, based on the amount of silica, of silane coupling agent identical to that presently claimed, and (iv) 1-15%, based on the amount of silica, of free tertiary amine such as trioctylamine. It is further disclosed the composition is suitable for use in a tire tread and sidewall composition (col.6, lines 6-22, col.8, lines 30-32 and 57-62, col.9, lines 23-52, and col.10, lines 4-7).

The difference between Hojo and the present claimed invention is the requirement in the claims of guanidine.

Hojo discloses the use of vulcanization accelerators, but there is no explicit disclosure of guanidine.

Jalics et al., which is drawn to rubber composition disclose the use of 0.05-3 phr accelerator such as guanidine including diphenylguanidine in order to control the time and

temperature required for vulcanization as well as improve the properties of the vulcanizate (col.8, lines 61-63 and col.9, lines 1-3 and 15-17). Using this amount of guanidine in the rubber composition of Hojo, it is calculated that the guanidine is present in an amount of 0.6-20% based on the amount of silica.

In light of the motivation for using guanidine described by Jalics et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use guanidine in the rubber composition of Hojo in order to control the time and temperature required for vulcanization as well as improve the properties of the vulcanizate, and thereby arrive at the claimed invention.

7. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn (U.S. 6,517,653) in view of EP 451604.

Hahn discloses rubber composition vulcanizable with sulfur which comprises diene polymer, silica, silica coupler identical to that of presently claimed formula (I), guanidine, and amine (col.1, lines 44-49 and 54-57, col.3, lines 38-39 and 53-65, col.4, lines 5-10, col.4, line 50-col.5, line 49, col.6, lines 1-2, and col.6, line 61-col.7, line 6). Attention is drawn to example 11, which discloses rubber composition comprising polybutadiene, silica, silica coupler, diphenylguanidine, and hexamethylenetriamine.

The difference between Hahn and the present claimed invention is the requirement in the claims of diene polymer which has at least one amino terminal group.

EP 451604 discloses rubber composition comprising diene polymer which has amino functional group of an amine which is bonded at the end of the chain in order to form tire tread

having reduced rolling resistance and increased rebound resistance (col.4, lines 38-58, col.5, lines 3-7, and col.6, lines 20-40).

In light of the motivation for using specific diene polymer disclosed by EP 4516045 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such diene polymer in the rubber composition of Hahn in order to form composition which produces tire tread with reduced rolling resistance and increased rebound resistance, and thereby arrive at the claimed invention.

8. Claims 28- 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hojo (U.S. 5,939,493) in view of Jalics et al. (U.S. 5, 708,053) and EP 451604.

Hojo discloses a sulfur vulcanized rubber composition comprising rubber such as polybutadiene, styrene-butadiene, and polyisoprene, silica, silane coupling agent identical to that presently claimed, and free tertiary amine such as trioctylamine. It is further disclosed the composition is suitable for use in a tire tread and sidewall composition (col.6, lines 6-22, col.8, lines 30-32 and 57-62, col.9, lines 23-52, and col.10, lines 4-7).

The difference between Hojo and the present claimed invention is the requirement in the claims of (a) guanidine and (b) diene polymer that has at least one amino terminal group.

With respect to difference (a), Hojo discloses the use of vulcanization accelerators, but there is no explicit disclosure of guanidine.

Jalics et al., which is drawn to rubber composition disclose the use of 0.05-3 phr accelerator such as guanidine including diphenylguanidine in order to control the time and temperature required for vulcanization as well as improve the properties of the vulcanizate

(col.8, lines 61-63 and col.9, lines 1-3 and 15-17). Using this amount of guanidine in the rubber composition of Hojo, it is calculated that the guanidine is present in an amount of 0.6-20% based on the amount of silica.

With respect to difference (b), EP 451604 discloses rubber composition comprising diene polymer which has amino functional group of an amine which is bonded at the end of the chain in order to form tire tread having reduced rolling resistance and increased rebound resistance (col.4, lines 38-58, col.5, lines 3-7, and col.6, lines 20-40).

In light of the motivation for using guanidine described by Jalics et al. as described above and for using specific type of diene polymer disclosed by EP 451604 as described above, it therefore would have been obvious to one of ordinary skill in the art to use guanidine and such diene polymer in the rubber composition of Hojo in order to control the time and temperature required for vulcanization as well as improve the properties of the vulcanizate as well as to form composition which produces tire tread with reduced rolling resistance and increased rebound resistance, and thereby arrive at the claimed invention.

Response to Argument

9. Applicants' arguments and 1.132 declaration filed 5/27/03 have been fully considered but they are not persuasive.

Specifically, applicants argue that in light of the 1.132 declaration, the combination of Hojo with Jalics et al. is no longer applicable against the present claims, since applicants have established criticality over the cited prior art with respect to the use of guanidine.

Previously, in response to applicants attempts to establish criticality regarding the use of guanidine, examiner had argued that the comparative data does not show proper side-by-side comparison between composition of the present invention, i.e. comprising amine and guanidine (composition 19) and composition outside the scope of the present claims, i.e. comprising amine not guanidine (composition 17) given that composition 19 and composition 17 utilize different amounts of amine and thus the examiner cannot tell if the differences between the compositions are due to the presence of guanidine or to the difference in the amounts of amine.

In response, applicants have submitted 1.132 declaration which states that if a control composition were prepared, i.e. control composition 17', which uses same amount of amine as in example 19, i.e. 4.5 mmol, an increase in hysteretic loss would occur due to an increase in the interactions between hydroxyl groups of silica, and as a result, the control composition 17' would exhibit higher hysteretic losses than composition 17 which contains 7.1 mmol amine. Thus, when comparing control composition 17' to composition 19, one would see that inventive composition 19 is superior in terms in hysteretic loss.

However, it is the examiner's position that the declaration is not persuasive for the following reasons.

Firstly, when discussing the declaration on pages 13-14 of the amendment filed 5/27/03, applicants state that the control composition 17' would have tg δ and G" less than the respective values found in composition 17. However, this is confusing in light of paragraph 5 of the declaration which states that using less amine would increase the hysteretic losses. In light of this statement in the declaration, wouldn't the values of tg δ and G" be greater than the values of

tg δ and G" for composition 17? That is, given that the declaration states that upon reducing the amount of amine from 7.1 mmol to 4.5 mmol, the hysteretic losses would increase, it is not clear why applicants argue in the table on page 14 of the amendment that at 4.5 mmol, tg δ and G" would be less than their respective values at 7.1 mmol. If hysteretic losses were increasing, one would expect the values of tg δ and G" to increase, not decrease. Evidence to support this position is found in paragraphs 57-58 of the present specification. Here, control composition 1 is compared to inventive compositions 2-4. Control composition 1 has tg δ and G" greater than each of compositions 2-4. In paragraph 58, applicants state that compositions 2-4 which have lower values of tg δ and G" , have hysteretic properties that are "considerably improved" in comparison to control composition 1. Thus, it would appear that lower values of tg δ and G" are associated with improvement in hysteretic losses.

Thus, it is not clear why applicants state that in control composition 17', hysteretic losses increase and then at the same time state that the values of tg δ and G" are lower. Based on compositions 1-4 in the specification, it would appear that increase in hysteretic losses would correspond to an increase in tg δ and G" . Clarification is requested.

Secondly, if the values of tg δ and G" are lower as set forth in the table on page 14 of the amendment, the declaration is also unpersuasive because it is not clear what the difference is between control composition 17' and composition 19. That is, "values less than 0.308" for tg δ and "values less than 1.05" for G" encompasses the values of tg δ and G" set forth for composition 19. Thus, it is not clear what if any difference exists between control composition

17' and composition 19 or thus, what, if any improvement, is exhibit by the inclusion of guanidine in composition 19. Clarification is requested.

Therefore, contrary to applicants statement on page 13 of the amendment filed 5/27/03, composition 19 does not demonstrate improved reduced hysteresis in comparison to control composition 17' since composition 17' also demonstrates improved reduced hysteresis, i.e. lower values of tg δ and G".

Applicants argue that Jalics et al. teach away from the present invention given that Jalics et al. disclose covering the silica by pre-treating with silane modified elastomer while showing that composition comprising such pre-treated silica is superior to composition comprising silica and silane modified elastomer separately.

However, it is noted that Jalics et al. is not used for its teaching of silica, rather, Jalics et al. is used for its teaching that rubber compositions suitable for use as tire treads typically contain accelerator such as guanidine including diphenylguanidine in order to control the time and temperature required for vulcanization as well as improve the properties of the vulcanizate. Further, given that Jalics et al. is used as teaching reference, it is not necessary for this secondary reference to contain all the features of the presently claimed invention, *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), *In re Keller* 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather this reference teaches a certain concept, and in combination with the primary reference, discloses the presently claimed invention. Additionally, while Jalics et al. teach that the use of silica pre-treated with silane modified elastomer is superior to the use of silica and silane modified elastomer separately, this applies only to the use of silica with silane

modified elastomer. The reference does not teach against using silica and all covering agents, such as free amine, separately.

Allowable Subject Matter

10. Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 23 would be allowable over the "closest" prior art if re-written in independent form as described above, given that there is no disclosure or suggestion in Hahn (U.S. 6,517,653) or Hojo (U.S. 5,939,493) of method of preparing rubber composition comprising in order preparing diene polymer in solution, stopping the polymerization, adding the aliphatic or cycloaliphatic amine to the solution, and then stripping the solvent as required in present claim 23.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Muraoka et al. (U.S. 6,520,229) discloses rubber composition comprising styrene-butadiene, silica, silane coupling agent, and diphenylguanidine. However, there is no disclosure of free amine and/or diene polymer that has one amino terminal group as required in the present claims.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
July 30, 2003